Nuclear Energy

Note 1. Pending Actions on Nuclear Generating Units. Much of Table 9.1 is based on the U.S Nuclear Regulatory Commission (NRC) regulation 10 CFR Part 50, which has in most instances been supplanted by 10 CFR Part 52 following the passage of the Energy Policy Act of 1992 and procedural reforms initiated in 1989 by the NRC. (This statement applies to permit and license procedures only.)

In 2009, the NRC issued one Early Site Permit (ESP) under 10 CFR Part 52 to the Vogtle nuclear plant in Georgia. Simultaneously, NRC issued Vogtle a Limited Work Authorization (LWA). As of December 31, 2009, no new ESP applications have been submitted since August 2006.

As of December 31, 2009, the NRC has 13 Combined License (COL) applications under review—for Bell Bend (Pennsylvania), Bellefonte 3 and 4 (Alabama); Calvert Cliffs 3 (Maryland); Comanche Peak (Texas); Fermi 3 (Michigan); Levy County 1 and 2 (Florida); Turkey Point (Florida); Virgil C. Summer 2 and 3 (South Carolina); and Vogtle 3 and 4 (Georgia); and William States Lee III units 1 and 2 (South Carolina). As of that date, the Turkey Point COL application (submitted in June 2009) was the last such application received by the NRC. At the request of the applicants, review has been suspended for Callaway 2 (Missouri), Nine Mile Point 3 (New York), and River Bend 2 (Louisiana). The Victoria County 1 and 2 COL application was withdrawn following the announcement that the applicant intends to apply instead for an ESP with the reactor choice unspecified. In addition to the COL applications currently under review, Watts Bar 2 is currently under construction. Watts Bar 2 was issued a construction permit in 1973, and the U.S. Energy Information Administration projects that the unit will be brought on line in 2014. This is the only reactor that is anticipated to apply for the license separate of construction permit. TVA has also requested that Bellefonte 1 and 2, two partially completed units, be moved to 'deferred plan' status as the Agency ponders either completing one or both.

As of December 31, 2009, 14 applications for license extensions were under review by the NRC. The NRC granted the following 20-year license extensions in 2009: Oyster Creek, on April 8th; Vogtle 1 and 2 in June; Three Mile Island in October; Beaver Valley (two units) on November 5th, and Susquehanna 1 and 2 also in November.

For more information on nuclear reactors, see http://www.nrc.gov/reactors.html.

Note 2. Coverage of Nuclear Energy Statistics. In 1997, the U.S. Energy Information Administration undertook a major revision of Table 9.1 to more fully describe the history of the U.S. commercial nuclear power industry. The time frame was extended back to the birth of the industry in 1953 and the data categories were revised for greater relevance to current industry conditions and trends. To acquire the data for the revised categories, it was necessary to develop a reactor unit database employing different sources than those used previously for Table 9.1 and still used for Table 9.2.

The data in Table 9.1 apply to commercial nuclear power units, which means that the units contributed power to the commercial electricity grid. A total of 259 units ever ordered was identified. Although most orders were placed by electric utilities, several units are or were ordered, owned, and operated wholly or in part by the Federal Government, including BONUS (Boiling Nuclear Superheater Power Station), Elk River, Experimental Breeder Reactor 2, Hallam, Hanford N, Piqua, and Shippingport.

A reactor is generally defined as operable in Table 9.1 while it possessed a full-power license from the Nuclear Regulatory Commission or its predecessor the Atomic Energy Commission, or equivalent permission to operate, at the end of the year. The definition is liberal in that it does not exclude units retaining full-power licenses during long, non-routine shutdowns. For example:

- In 1985, the five Tennessee Valley Authority units (Browns Ferry 1, 2, and 3 and Sequoyah 1 and 2) were shut down under a regulatory forced outage. Browns Ferry 1 was authorized by the NRC to restart in 2007, while the other units restarted in 1991, 1995, 1988, and 1988, respectively. All five units were counted as operable during the shutdowns.
- Shippingport was shut down from 1974 through 1976 for conversion to a light-water breeder reactor, but is counted as operable until its retirement in 1982.
- Calvert Cliffs 2 was shut down in 1989 and 1990 for replacement of pressurizer heater sleeves but is counted as operable during those years.

Exceptions to the rule are Shoreham and Three Mile Island 2. Shoreham was granted a full-power license in April 1989, but was shut down two months later and never restarted. In 1991, the license was changed to Possession Only. Although not operable at the end of the year, Shoreham is treated as operable during 1989 and shut down in 1990, because counting it as operable and shut down in the same year would introduce a statistical discrepancy in the tallies. A major accident closed Three Mile Island 2 in 1979, and although the unit retained its full-power license for several years, it is considered permanently shut down since that year.

Table 9.1 Sources: Operable Units: • 1955-1982–Compiled from various sources, primarily U.S. Department of Energy (DOE), Office of Nuclear Reactor Programs, "U.S. Central Station Nuclear Electric Generating Units: Significant Milestones." • 1983 forward–U.S. Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report," and predecessor forms. **All Other Data:** • 1955-1997–U.S. Atomic Energy Commission, *1973 Annual Report to Congress, Volume 2, Regulatory Activities*; Nuclear Energy Institute, *Historical Profile of U.S. Nuclear Power Development* (1988); EIA, *Commercial Nuclear Power 1991* (September 1991); DOE, *Nuclear Reactors Built, Being Built, and Planned: 1995*; U.S. Nuclear Regulatory Commission (NRC), *Information Digest* (1997 and 1998) and "Plant Status Report"; and various utility, Federal, and contractor officials. • 1998 forward–NRC, *Information Digest*, annual reports.